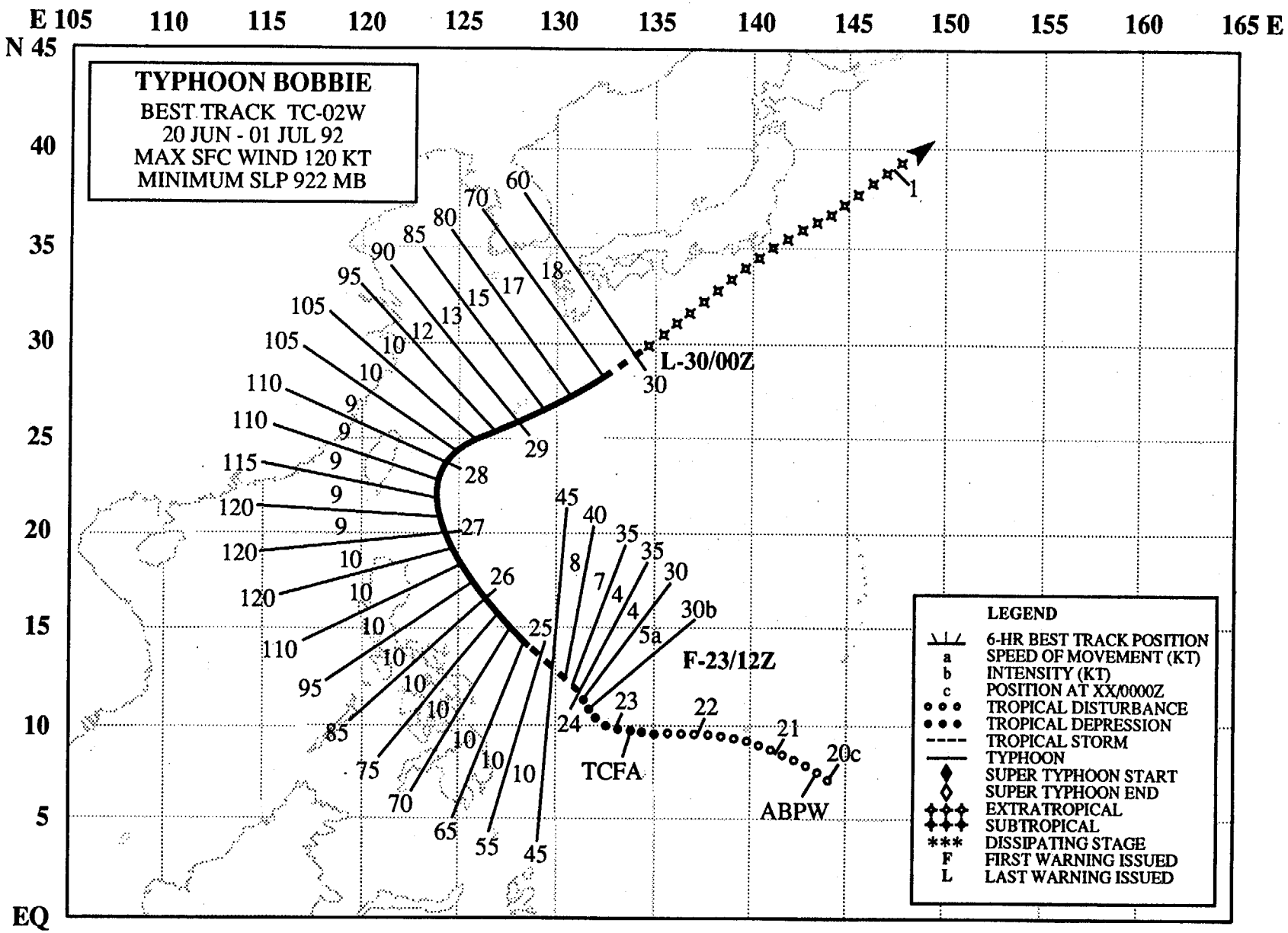
TYPHOON BOBBIE
BEST TRACK TC-02W
20 JUN - 01 JUL 92
MAX SFC WIND 120 KT
MINIMUM SLP 922 MB
E 105
110
115
120
125
130
135
140
145
150
155
160
165 E
N 45
40
35
30
25
20
15
10
5
EQ
L-30/00Z
F-23/12Z
TCFA
ABPW
LEGEND
6-HR BEST TRACK POSITION
a SPEED OF MOVEMENT (KT)
b INTENSITY (KT)
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED

TYPHOON BOBBIE (02W)

I. HIGHLIGHTS

The second typhoon of the year, Bobbie formed in the monsoon trough in late June after a four month hiatus in tropical cyclone activity in the western North Pacific Ocean. Bobbie's formation in the central Caroline Islands coincided with that of Chuck (03W) over the central Philippine Islands, and the two underwent binary interaction for three days. Bobbie reached typhoon intensity several days prior to recurving. After recurvature, the typhoon accelerated, tracked just to the southeast of Okinawa and underwent extra-tropical transition before passing just south of Tokyo.

II. TRACK AND INTENSITY

By 15 June, the monsoon trough became established in its normal climatological location across the South China Sea, the central Philippine Islands and extended into the Caroline Islands. Bobbie was the first significant cyclone to form in this trough. The tropical disturbance was detected as a poorly organized area of convection south of Guam near Woleai Atoll in the central Caroline Islands and first mentioned on the Significant Tropical Weather Advisory at 200600Z. Development of the circulation continued and JTWC issued a Tropical Cyclone Formation Alert at 221900Z followed by the first warning at 231200Z. At the same time, a second tropical cyclone, Chuck (03W), formed farther to the west in the monsoon trough over the central Philippine Islands. Due to the proximity of the two cyclones, binary interaction occurred during the period between 240600Z and 271200Z. The binary pair remained within 750 nm (1390 km) of each other and appeared to undergo relative cyclonic rotation about a common midpoint for three days (Figure 3-02-1).

Bobbie tracked northwestward and was upgraded to a typhoon at 250600Z. Intensification continued until a peak of 120 kt (62 m/sec) (Figure 3-02-2) was reached at 261800Z. By this time, Bobbie had also reached the western extent of the mid-level subtropical ridge where recurvature began to the east of Taiwan at 271200Z. As gradual acceleration began under increasing southwesterly winds aloft, Bobbie passed over Miyako Jima on 28 June and then just southeast of Okinawa on 29 June. Kadena AB, Okinawa reported the closest point of approach of 24 nm (44 km), a peak wind of 68 kt (35 m/sec), and a minimum sea-level pressure of 978 mb at 290028Z. When Bobbie underwent extratropical transition on 30 June southeast of Kyushu, JTWC issued the final warning on the system at 300000Z. The intense low pressure center with associated gale force winds brushed by the southern tip of Honshu and proceeded out to sea.

III. FORECAST PERFORMANCE

After the fact, Bobbie's best track appears to be a straight forward case of recurvature. At the start however, based on persistent westward movement of Bobbie in the formative stages of development and the guidance provided by the dynamic aids, the forecast philosophy was for a straight running track west-northwestward along the axis of the monsoon trough. It appears that the development of Typhoon Chuck (03W) to the west, and the resulting binary interaction, influenced Bobbie's track change to the northwest. Later, when gradual recurvature was expected to occur, as Bobbie approached the ridge axis situated near 25° North Latitude, the western extension of the subtropical ridge eroded faster than depicted by the dynamic model and the typhoon recurved earlier and at a lower latitude. From the recurvature point, the tropical cyclone was forecast to pass to the west of Okinawa. At 280600Z, the strengthening of the upper-level jet south of Honshu was noted, and at 281800Z the track

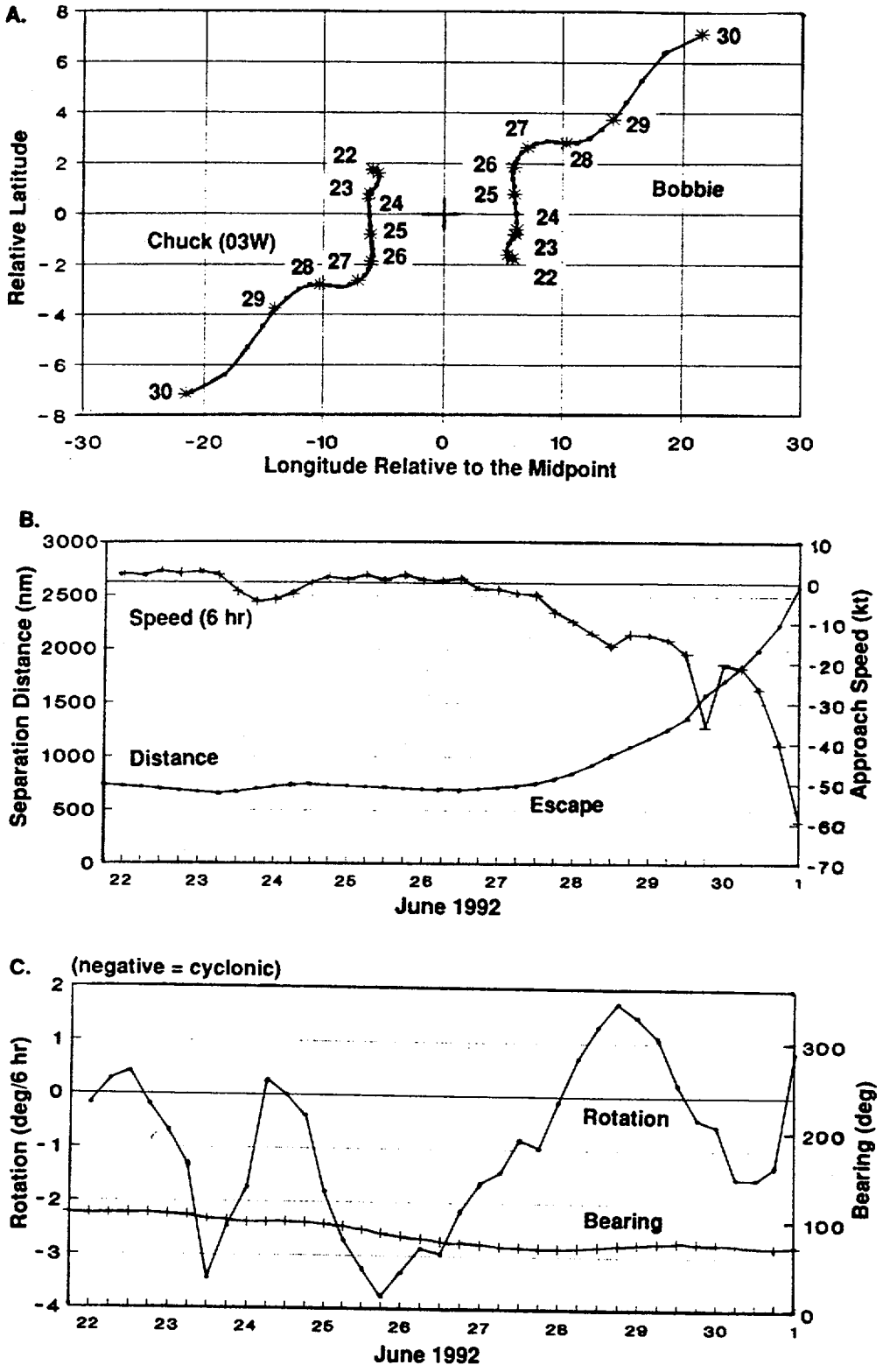

Figure 3-02-1. A set of graphs depict the binary interaction between Bobbie and Chuck (03W). The motion relative to a common midpoint is shown in (A), nearly constant 750 nm (1390 km) separation in (B), and cyclonic rotation in (C).

forecast was adjusted correctly for Bobbie to pass to the east of Okinawa. Despite the shift in the forecast track, ample warnings and detailed prognostic reasoning messages evaluating the potential for alternate scenarios gave Okinawa enough time and information to adequately prepare.

With respect to intensity forecasts, the errors were quite large initially due to the expected interaction with rugged northern Luzon which did not occur. And later, in like fashion, the forecast interaction with Taiwan didn't occur and the typhoon intensified over water.

IV. IMPACT

As the typhoon passed east of the northern Luzon, torrential rains associated with the deep monsoonal flow into Bobbie and enhanced by Chuck (03W) caused heavy rains, mudslides, and widespread flooding over the northern Philippine Islands. These conditions were aggravated in the area of Mount Pinatubo when a "secondary" volcanic explosion occurred on 27 June, triggering flows of lava, mud, ash, and sand up to 5 feet deep down the mountains sides. No deaths or injuries were reported in the towns near the volcano due to timely evacuations of the population. On 28 June, Bobbie passed over Miyako Jima. Okinawa was next. The island boarded up and schools were closed. On 29 June, these preparations paid off and only minor damage to buildings, property and vegetation occurred. Kadena Air Base reporting one trailer overturned and small trees uprooted. One woman received head injuries when she was knocked down by the strong wind.

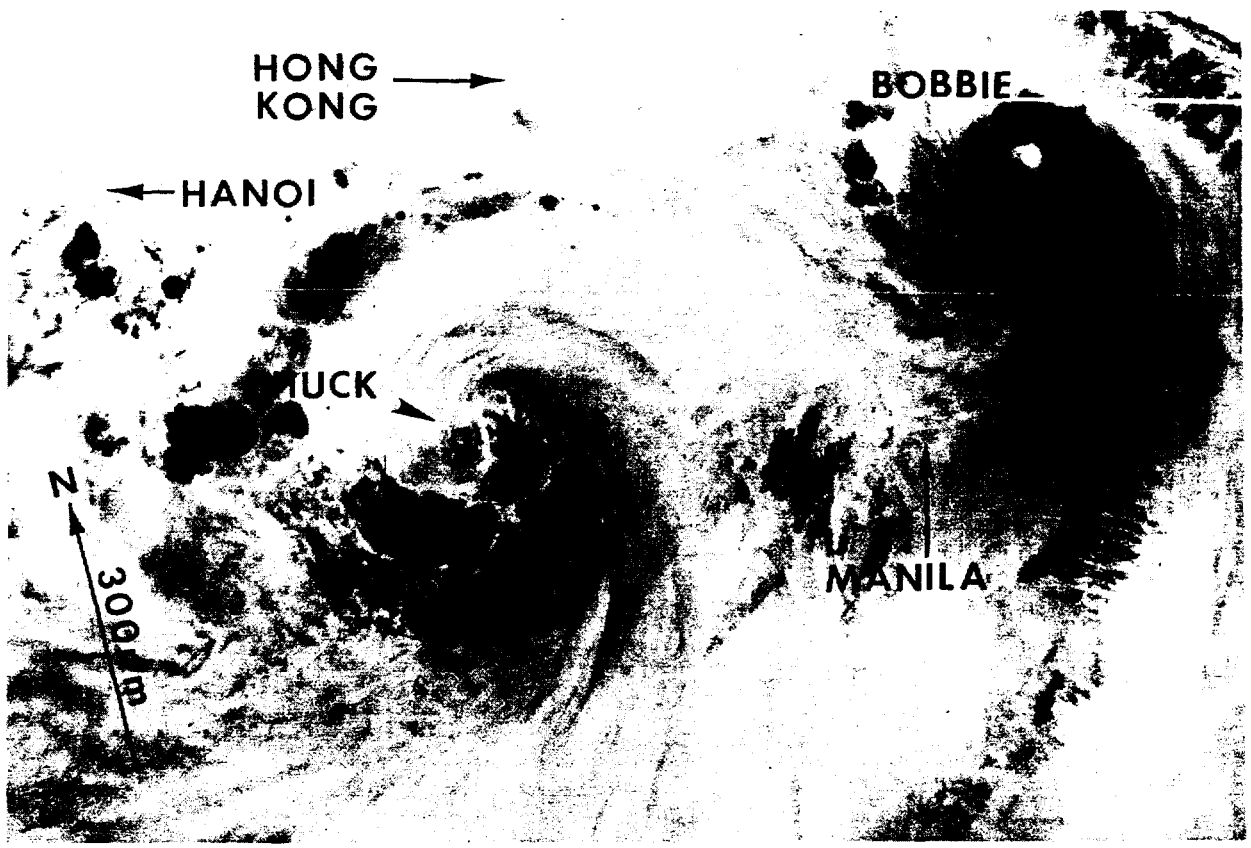

Figure 3-02-2. Typhoon Bobbie at a peak intensity of 120 kt (62 m/sec) and approaching its point of recurvature. Chuck (03W) can be seen over the South China Sea to the southwest of Bobbie (261949Z June NOAA infrared imagery).